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**REMARKS**

Claims 8-11, 13-17 and 19 are pending and have not been amended hereby. In the non-final Office Action mailed March 9, 2005, the Office addressed the claims as follows: claims 8-11, 13-17 and 19 are rejected pursuant to 35 USC 103(a) as being unpatentable over Rogers et al. (Patent No. 6,139,694) in view of Alix et al. (6,117,403) or Ruan et al. (6,565,716); claims 8-11, 13-17 and 19 are rejected under the judicially created doctrine of double patenting in view of claims 2, 3 and 5-7 of US Patent No. 6,309,610. In view of the remarks presented herein, the undersigned respectfully traverses this rejection as set forth below.

**Rejection of Claims 8-11, 13-17 and 19 Under 35 USC 103(a)**

As set forth in the submission with Request for Continued Examination, independent claim 8 includes the following:

8. An apparatus for converting nitric oxide in exhaust gas into nitrogen dioxide, comprising:
- a plasma reactor having a plurality of dielectrically-coated electrodes defining at least one reaction zone configured to receive the gas, said dielectrically-coated electrodes each having an electrode plate completely enclosed within a fluoropolymeric shell, the fluoropolymeric shell having a dielectric strength of 60 kV/mm; and
  - a voltage supply connected to each of the dielectrically-coated electrodes to provide a voltage across the dielectrically-coated electrodes.

In the non-final Office Action, the Office admits that the primary reference, Rogers (6,139,694), does not teach or suggest that the electrode plate is completely enclosed within the claimed fluoropolymeric dielectric having the specified dielectric strength. The Office has argued that Alix et al. or Ruan et al. teach the complete enclosure of an electrode within a dielectric material and that Rogers lists Teflon and Teflon PFA as useable dielectric materials and this the

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combination of limitations recited in independent claim 8 would have been obvious to one skilled in the art.

The undersigned respectfully submits that the use of the fluoropolymeric shell having a dielectric strength of 60 kV/mm as claimed in independent claim 8, in combination with the other limitations of claim 8, produced unexpected results. All of the references cited, i.e., Rogers, Alix and Ruan, generally disclosed the use of a dielectric material, wherein a laundry list of available materials are deemed appropriate for use, e.g., glass, ceramic, quartz, Teflon, epoxy, etc. Rogers deemed any of these dielectric materials to be equally appropriate and did not describe complete enclosure of the electrodes. Referring to page 21, line 22 through page 22, line 8 and Figure 5 of the present application:

The use of ethanol as a pre-injectant increases the efficiency of the non-thermal plasma apparatus by as much as a factor of ten. The combined use of ethanol injection and fluorocarbon dielectrics further increases efficiency. Referring to FIG. 5, the NO concentrations in gas streams containing molar ratios of ethanol to initial NO of 8:1 are compared for PYREX™ glass and TEFLON™ PFA dielectrics. When using the TEFLON™ PFA dielectrics, substantially 90% NO removal was obtained with only 48 Watts of plasma reactor power. The calculated molecular energy consumption for this data point was approximately 17 eV per NO representing a 30% decrease in energy consumption as compared to the stream treated with PYREX™ glass dielectrics.

This explicit description evidences the unexpected results, i.e., significant decrease in energy consumption, that results from the use of a fluoropolymeric shell having a dielectric strength of 60 kV/mm, i.e., TEFLON™ PFA (See Table 1). See MPEP 716.02(b)II. DIRECT AND INDIRECT COMPARATIVE TESTS ARE PROBATIVE OF NONOBVIOUSNESS (Evidence of unexpected properties may be in the form of a direct or indirect comparison of the claimed invention with the closest prior art which is commensurate in scope with the claims. See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)). These unexpected results were clearly not identified or contemplated by the art cited as these references merely describe the use of any of a

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laundry list of dielectric materials, equating glass with fluoropolymeric materials, for the purposes described. Accordingly, the combination of Rogers with one of Alix or Ruan does not render obvious the claimed subject matter, as the claimed invention has unexpected results.

**Rejection of claims 8-11, 13-17 and 19 Under Obviousness-type Double Patenting in View of Patent No. 6,309,610**

Initially, the undersigned notes that the Office has cited the paragraphs from the MPEP that relate to statutory double patenting under 35 USC 101. This rejection is only available when claims are virtually identical. But in the actual argument, the Office references the judicially created doctrine of obviousness-type double patenting — which is not statutory and can be overcome with a terminal disclaimer. The undersigned assumes that the latter rejection was intended.

The undersigned submits that this rejection is moot as none of the claims of US Patent No. 6,309,610 recite at least the following limitation, "the fluoropolymeric shell having a dielectric strength of 60 kV/mm." As the office knows, only the claims and not the specification of the '610 patent may be used in a double patenting rejection. *In re Braithwaite*, 379 F.2d 594, 154 USPQ 29 (CCPA 1967); *See* MPEP 804(II)(B)(1). While the specification may be referenced in order to aid in the interpretation of limitations, it cannot be used for teachings of specific limitations that are not recited in the claims.

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**CONCLUSION**

The undersigned believes that claims 8-11, 13-17 and 19 are allowable over the cited prior art and respectfully requests a notice of allowance to this effect. Should the Examiner determine that any further action is necessary to place this application into better form, the Examiner is encouraged to telephone the undersigned representative at the number listed below. In addition, if any additional fees are required in connection with the filing of this response, the Commissioner is hereby authorized to charge the same to Deposit Account No. 501458.

Respectfully submitted,

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